



Improvement Cymru Academy Toolkit Guide



Spaghetti Diagrams

What is a Spaghetti Diagram?

The Spaghetti diagram is a visual tool to help you establish the optimum layout for a physical activity in an environment such as a department or ward based on observations of the distances travelled by patients, staff or products, such as X-rays.

Rationale

Spaghetti diagrams have the ability to expose inefficient layouts, identifying distance travelled between key steps of a task or process. The Spaghetti diagram is a simple mapping tool, helping to identify areas where time can be saved by visualising unnecessary movement of products, staff or patients. It gives you a visual overview of the geography of the process.

Background

Spaghetti diagram is a simple tool for the LEAN process improvement. Lean Six Sigma is about eliminating unnecessary actions, making the work process much more efficient.

When to use?

The Spaghetti diagram is useful when you want to assess time wasted through unnecessary movement through a ward, clinic, department or whole hospital. By reviewing and drawing the current “as is” Spaghetti diagram, you can see where there is potential to make processes more efficient and improve layouts to reduce distances travelled. This may be a case of simply moving the layout of a room and materials used in that room or building.

How to use?

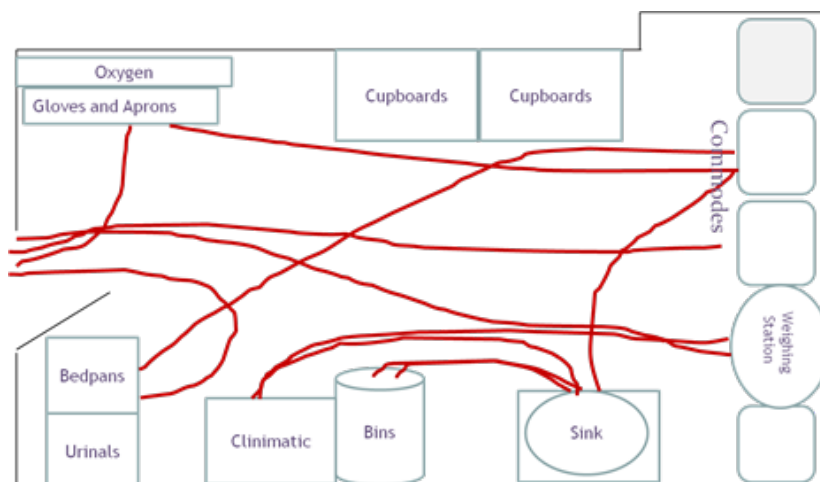
- Decide what you are going to observe – e.g. product, staff or patient flow. You may decide to analyse a number of these simultaneously by using different coloured lines to represent each flow.

- Involve representatives from your team in the process of drawing the Spaghetti diagram.
- Explain what is being done and what the potential benefits may be for both the team (minimising effort) and patients (improved experience) and the organisation (maximising resources) .
- Ask estates for a diagram (or draw your own) of the floorplan of the area you are working with.
- Draw lines on it to show the flow of movement as it is now; this could be the movement of staff or a patient depending on the problem you are addressing, e.g. a patient attending a diabetic review, or a nurse on a ward changing a patient's catheter.

By analysing the lines, you can identify any areas with unnecessary movement.

Next, assess your diagram to help you redesign the process. Remember lines on a Spaghetti diagram represent movement and therefore waste. Can you bring two points closer together to optimise flow? This can act as a starting point for drawing a new Spaghetti diagram to reflect the desired flow.

Diagram1: Example Spaghetti Diagram



What next?

Spaghetti diagrams are best used in conjunction with other tools and techniques that help build a visual picture of the workings of a department, e.g. process mapping or value stream mapping.

Helpful Tips

- Note the time, date and process being evaluated, but not the name of individuals.
- Explain to the team what's being done and ask for a volunteer.
- Trace the actual steps taken.
- Note any stops with sequential numbers and mark the time for each stop.
- Note any awkward elements in the line taken.
- Mark any interruptions in the path – such as a surgeon 'gowning up' in theatre.
- Note why certain trips are made, e.g. getting necessary supplies or signatures.
- Ask questions and seek suggestions from the team – the best ideas often come from those who live the process.

Additional resources

If you would like to learn more about making improvement to your workplace take a look at our website for what we offer you <https://phw.nhs.wales/services-and-teams/improvement-cymru/improvement-cymru-academy/> or email us [improvementcymruacademy \(Public Health Wales\)](mailto:improvementcymruacademy@wales.nhs.uk) <improvementcymruacademy@wales.nhs.uk> to find about the improvement courses we can offer.

References

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